PREDICTING THE OUTCOME OF COLD-CALLING

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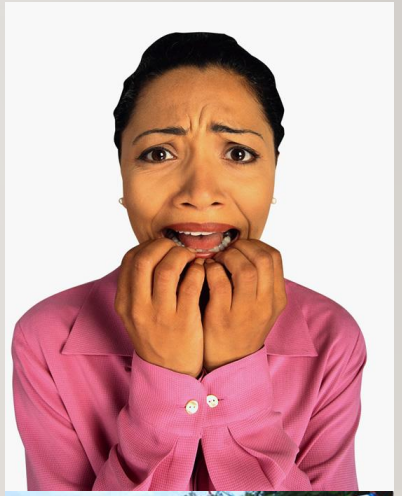
THE DILEMMA

- Have you ever been forced to make small-talk with a stranger?
- Have you ever nervously waited for approval from another person while wondering if you're saying the right things?
- Have you ever been rejected at the last minute despite gaining rapport and thinking the conversation was actually going somewhere?

- Well then… welcome to the world of a car insurance salesman



MACHINE LEARNING TO THE RESCUE

Machine learning can help focus a salesperson's efforts upon segments of the population more likely to buy!

- 4000 data points
  - 40% positive
  - 60% negative
- 17 Features

Data Transformation

Model Testing

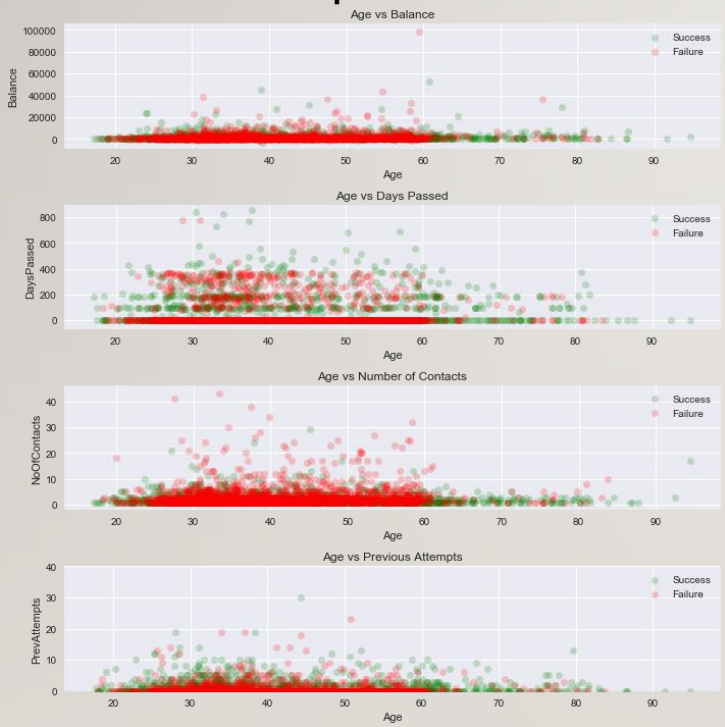
- Logistic Regresion
- Random Forest
- Gradient-boosted Random Forest

- Improvements over Baseline
- "Unlimited" resources- target outcome
- Limited resources-Expected outcome

Business Implication

DATA TRANSFORMATION

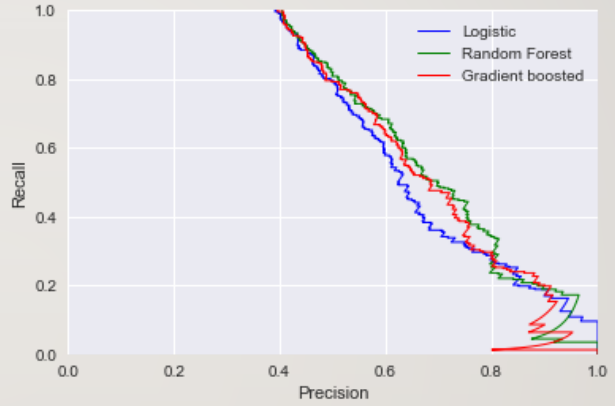
A Sample of the Data

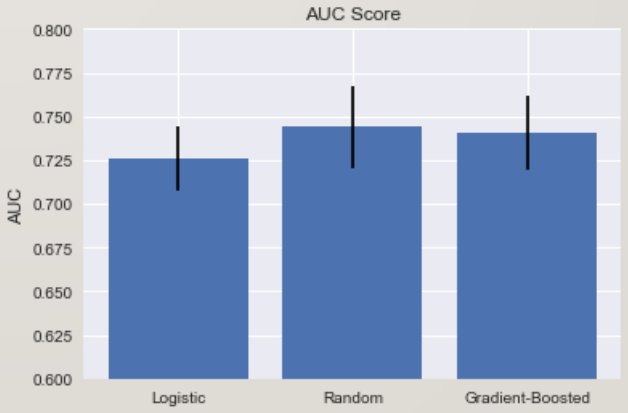


- A cursory look into monovariable plots vs outcome did not reveal good splits (not shown)
- Created interaction terms to isolate subgroups within multiple features
- Dummy variables were created to represent categorical features

CHOICE OF MODEL

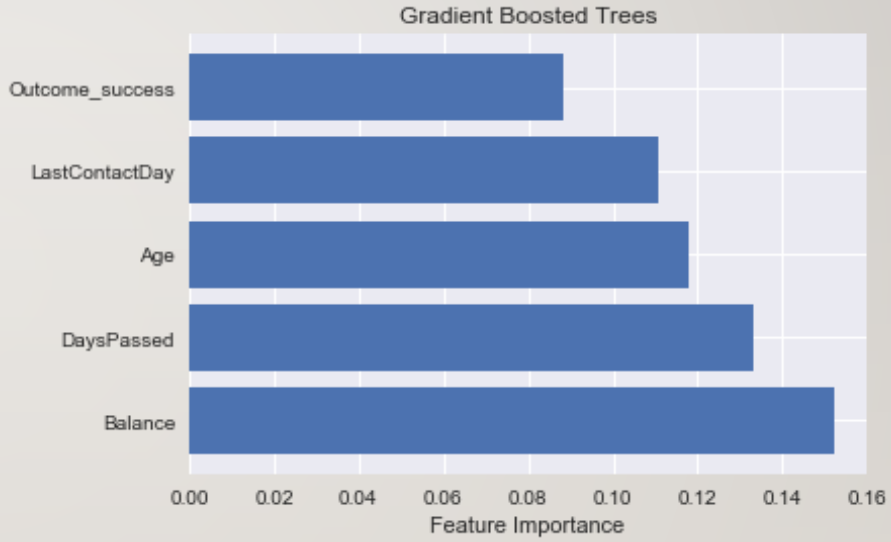
- Three models were examined using 5-fold cross validation methodology.
- A grid search was performed for each to determine optimal parameters
- Given these choice of models, gradient-boosted RF was chosen for its robustness





INTERPRETATION: FEATURE IMPORTANCE

- Average yearly balance
- Days passed since contact from previous campaign
- Age of client
- Last Contact Day
- Outcome of the previous marketing campaign



BUSINESS IMPLICATIONS

- How does implementation of this predictive model help business?
- Given another similar sample population, we can predict the improvement over baseline

- Given resource constraints, we can predict the number of successes for another representative population
- Or vice-versa, given a target number of sales, we can predict how much resource to dedicate to the task